CURRENT BOTANY

Curr. Bot. 2(1):08-09, 2011

REGULAR ARTICLE

In vitro antimicrobial activity of *Cassia tora* L. stem

R.T.Chavan, V.J. Kalane and V.L. Deshmukh

Department of Botany, Toshniwal College, Sengaon Dist. Hingoli-431513 (M.S.), India

KEYWORDS

Antibacterial activity, *Cassia tora*, Ethanolic extract

CORRESPONDENCE

R.T.Chavan, Department of Botany, Toshniwal College, Sengaon Dist. Hingoli-431513 (M.S.), India

E-mail: rtcbotany@gmail.com

EDITOR

Gadgile D.P.

CB Volume 2, Year 2011, Pages 08-09

ABSTRACT

Ethanolic and aqueous extracts from the stem of Cassia tora were investigated for their antibacterial activity. Their concentrations 0.10mg, 0.25 mg ethanolic and aqueous extracts respectively were studied in activity, which involved the determination of inhibition zone in mm. Both the extracts exhibited significant antibacterial activity. Streptomycin used as standard reference. The antibacterial activity of ethanolic and aqueous extracts of *Cassia tora* has therefore been demonstrated for the first time.

Introduction

Cassia tora (Leguminosae) is a wild crop and grows in most parts of India as a weed. According to Ayurveda the leaves and seeds are acrid, laxative, antiperiodic, anthelmintic, ophthalmic, liver tonic, cardiotonic and expectorant (Ahmad et al., 1998). The leaves and seeds are useful in leprosy, ringworm, cough, bronchitis, cardiac disorders (Chan and Peria, 2001). Component of *Cassia tora* are mutagenic and antioxidant activities has anthraquinones, chrysophanol, emodin, obtusifolin, obtusin, chryso-obtusin, aurantio-obtusin, and their glycosides. Naphthopyrones, rubrofusarin, norrubro fusarin, rubrofusaring, entiobioside.Toralactone, torachrysone. Roots contains 1, 3, 5-trihydroxy-6-7-dimethoxy-2-methylanth-roquinone and beta-sitosterol. While seeds contains naptho-alpha-pyrone-toralactune, chrysophanol, physcion, emodin, rubrofusarin, chrysophonic acid-9-anthrone.

Materials and Methods

Cassia tora stem were collected from local area of Parbhani district (M.S.). The taxonomical identification of plant was done by local flora and BSI Pune. Dried stem at room temperature and 10gm powdered stem were successively defatted with petroleum ether ($40\text{-}60^0$). Defatted residue was extracted with ethanol. Aqueous extract of this plant was prepared by Soxhlet apperatus. Extract was evaporated on water bath to give dried residues. Ethanolic and aqueous extracts from the stem of *Cassia tora* were investigated for their antibacterial activity against *Pseudomonas aeruginosa, Lactobacillus Salmonala typhi, P.vulgaris, Bacillus subtilis, Staphylococcus aureus, pneumoniae, E. coli, Enterobacter* bacterias. The filter paper disc methodwas performed using nutrient broth media (Somchit et al., 2003 and Villavicencio and Perez-Escandon, 1992). These agar media were inoculated with 0.5 mL of the 24 h liquid cultures containing 10 microorganisms / ml. Filter paper discs (3 mm diameter) saturated with solutions of each compound was placed on the indicated agar medium. The incubation time was 24 h at 37 ± 2°C. Standard discs of ciprofloxacin of 5µg/ml were used. Zone of inhibition was observed by zone reader scale. The tests were repeated to confirm the findings and the average of the readings was taken into consideration.

Result and Discussion

Preliminary phytochemical screening of alcoholic extract revealed the presence of anthraquinone glycosides, phenolic compounds; saponin glycoside and while aqueous extract showed presence of glycosides and phenolic compounds, saponinglycoside.

Table1. *Invitro* antibacterial activity of *Cassia tora* L. stem

Bacteria	Zone of inhibition		
	Ethanol 0.10mg/ml	Aqueous 0.25mg/ml	Stendared (streptomycin) 1mg
P. aeruginosa	10	11	18
Lactobacillus	12	14	16
S. typhi	-	4	24
P.vulgaris	11	12	15
B. subtilis	8	10	20
S. aureus	11	15	22
S. pneumonia	7	8	14
E. coli	11	12	15
Enterobacter	10	12	16

Antimicrobial activity of ethanolic extract (0.10mg) and aqueous extract (0.25 mg) against various bacteria but maximum activity is shown by aqueous extract against *Staphylococcus aureus, Lactobacillus* and show moderate activity against *Pseudomonas aeruginosa, P.vulgaris* and *Enterobacter* and show less activity against *Bacillus subtilis* and *Eschieria coli* aqueous extract did not show any against *Salmonella typhi*. While ethanolic extract show less activity as compared aqueous extract but show maximum activity against *Staphylococcus aureus Lactobacillus* (Table 1).

References

Ahmad, I., Mehmood, Z. and Mohammad, F. (1998).Screening of some Indian medicinal plants for their antimicrobial properties. J Ethnopharmacol. 62: 183-193.

Chan, M.J. and Peria, L.M. (2001). Plant natural products with leishmanicidal activity. Nat Prod Rep.18: 674-688.

Somchit, M.N., Reezal, I., Nur, E. and Mutalib, A.R. (2003). In vitro antimicrobial activity of ethanol and water extracts of *Cassia alata*. J Ethnopharmacol. 84: 1-4.

Villavicencio, M.A. and Perez-Escandon, B.E. (1992). Plumbagin activity from *Plumbago pulchella* Boiss. Plumbaginaceae as a feeding deterrent for three species of *Orthoptera*. Folia Entomol.Mex.86:191-198.